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Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate School
of The Ohio State University

By
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1971

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CHAPTER I

INTRODUCTION

The knowledge of man's communication with man has become one of our most important needs. This has come about because of the complex nature of society. The complexity of such a problem is very apparent in the business world where much research has been conducted in the area of business and organizational communication. Communication also has come to be recognized as a crucial component of the administrative process in education. In fact, it is difficult to imagine any kind of interpersonal activity which does not depend upon some form of communication. Barnard has stated that "coordination and collaboration in any human enterprise is possible only when communication is effective."¹

The amount of time and money devoted each year to improving communication provides enough evidence that organizations are extremely interested in learning more about human communication. Our colleges and universities also have realized the prominent role which communication plays within

the institutional structure and are now offering an increasing number of communication courses. According to Millet, "the major test of any university is the effectiveness of its communication system."²

For an organization to be effective the administrative leadership must provide and maintain an adequate network of communication within the organization. Davis has recognized this fact when he states:

Today's leader of men recognizes that communication is probably his most important responsibility. He knows that his leadership takes effect through the process of communication. If there is no communication, there is no leadership, because the leader interacts with others by communicating with them. Great leadership ideas are strictly 'armchair thoughts' until the leader through communication puts them into effect. Communication is not an end itself, but is the process by which ends are accomplished. ³

Prior to the 1940's few articles and studies had been devoted to the exploration of communication. Since that time, however, many have appeared. Some of them have reported the results of experience and research while others have been concerned with the development of a theory of communication.

Even though attention has been devoted to problems of communication in organizations, studies focusing on communication problems outside the laboratory have been few and far


One area of particular difficulty has been the inability to record actual communication patterns in an organization. An attempt will be made in this study to accomplish this problem.

Among the major questions to be answered by the analysis of communication patterns are these:

1. Who are the key communicators?
2. Which individuals or units of the organization are not receiving communications?
3. Which units of the organization act as barriers to communication flow?
4. Which units of the organization act as implementers of communication flow?
5. Which media tend to be more effective for communication?
6. Which media tend to be faster methods of communicating?
7. What is the role of nonteaching personnel in the communication process?
8. Do the men and women communicate with one another?

In conjunction with the more specific questions, this study is designed to answer many overall questions concerning the dynamics of communication flow within the school.

**Statement of the Problem**

The primary purpose of this investigation is to demonstrate through a method of communication analysis that it is possible to record and analyze communication patterns in terms of such variables as employment status, academic rank,
academic interest, sex, office location and years of service
within the School of Health, Physical Education and Recre­
tion at The Ohio State University. With this major purpose in
mind, recommendations will be made which can be used to im­
prove the communication patterns which now exist in the
School.

Since this is a time of reorganization within the School,
it is hoped that this type of study can be beneficial for the
future development of the School.

Hypothesis

It is the writer's hypothesis that the communication
patterns which exist in the School of Health, Physical Edu­
cation and Recreation at The Ohio State University inhibit
the flow of communications.

Sub-Hypotheses

1. That there is no significant relationship between
the sex of the person and the receiving of communications
from the Director of the School.

2. That there is no significant relationship between
the sex of the person and the amount of time it takes to
receive communications from the Director of the School.

3. That there is no significant relationship between
the type of media used and the amount of time in which
people receive communications.

4. That there is no significant relationship between the communication flow within "interest areas" and the communication flow between "interest areas."

5. That there is no significant relationship between employment status and people receiving communications.

6. That there is no significant relationship between academic rank and the amount of time it takes for people to receive communications.

7. That there is no significant relationship between horizontal communication among full-time faculty members and horizontal communication among teaching associates and assistants.

8. That there is no significant relationship between the origination of communications and people receiving communications.

9. That there is no significant relationship between the location of personnel and people in the different interest areas receiving communications.

**Definitions of Terms**

The essential terms have been defined in a variety of ways by different authors. For the purpose of this study the following terms will be used:

**School.** A School is considered an academic unit of a College. In this particular study, the School refers to
the School of Health, Physical Education and Recreation at The Ohio State University, which is an academic unit of the College of Education.

**Administration.** This term pertains to the status of several participants. An individual to be classified as Administration must be a member of the Executive Council. The members of this Council include: Dr. Lewis Hess, Director of the School and Chairman of the Executive Council; Dr. Chalmer Hixson, Chairman of the Men's Division; Dr. Mary Beyrer, Acting Chairman of the Women's Division; Dr. Wesley Cushman, Chairman of the Health Division; Dr. Robert Bartels, Chairman of Graduate Studies; Miss Naomi Allenbaugh, an appointed member from the Women's Division; and Dr. George Novotny, an appointed member from the men's division.

**Faculty.** An individual must have academic rank of instructor, assistant professor, associate professor or full professor to be classified as a faculty member.

**Staff.** Staff members include the teaching associates and teaching assistants.

**Part-time Help.** An individual who does not carry a full teaching load. A few of these individuals have academic rank but because of their other duties are considered part-time help.

**Special Area.** When it came time to classify according to teaching interest it was necessary to classify a few individuals in a special area. This included anyone teaching
in the areas of dance, movement education, motor learning, adapted physical education or history.

**Communication.** A brief definition which seems comprehensive and at the same time flexible, is that by Sanborn when he defines communication as "... the process of sending and receiving messages."^4

**Media.** "The physical or other devices for transmission of messages, such as publications, telephone, telegraph, radio, or television."^5 The questionnaire used in this study provides ten methods of receiving messages. These ten methods are subdivided under the headings of: Written and Visual and Talking and Listening.

**Source.** The source is the one who initiates a message. He is "the creator of an idea, or the developer and/or sender of a message."^6

**Message.** A message is the subject of communication, the "ideas, content, or subject matter to be communicated."^7

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^7Ibid.
Channel. "The line of passage for messages such as that from the superior to the subordinate, the sender-receiver path through which message material in some form is carried by some medium.\(^8\)

Receiver. An individual who receives a message. The receiver is the person from whom ultimate comprehension or behavior is expected.

Noise. Any kind of disturbance that affects the fidelity of a communication.

Encoder. "The communication encoder is responsible for taking the ideas of the source and putting them in a code, expressing the source's purpose in the form of a message."\(^9\)

Decoder. "Just as a source needs an encoder to translate his purposes into a message, to express purpose in a code, the receiver needs a decoder to translate, to decode the message and put it into a form that the receiver can use."\(^10\)

Feedback. It is the process of relaying information back into the system. "When one person responds to another's message, he is providing feedback."\(^11\)

\(^8\)DeMare, loc. cit., p. 259.


\(^10\)Ibid., p. 31.

Pattern. Refers to the networks or webs of communication relationships that have been established to accomplish a certain purpose.

Limitations of the Study

It is the intent of this study to examine the communication patterns which now exist within a particular School. While it is recognized that almost every organization has some problems with its communication patterns, this study will be limited to an examination of the communication patterns which now exist within the School of Health, Physical Education and Recreation at The Ohio State University.

An attempt will be made to limit the recording and analyzing of the communication patterns in terms of such variables as employment status, academic rank, academic interest, sex, office location and years of service at Ohio State.

The topic chosen for each communication survey will be the type communicated to particular individuals who teach within the school. Sometimes this will include all individuals who teach within the School and sometimes it will include a limited group of individuals within a particular unit.

In conducting each survey, just those communications which originate within the School will be used to analyze the communication patterns.
Finally, this study is limited to those individuals with administrative or teaching duties within the School. This includes full-time faculty members as well as teaching associates, teaching assistants and some part-time help.

**Significance of the Study**

Communication is a basic process of any effective organization. It acts as the "nervous system" which makes organizations cohere and permits their members to cooperate and coordinate. Laboratory research performed by Bavelas and Barrett led them to conclude:

Communication is not a secondary or derived aspect of organization — a 'helper' of the other and more basic functions. Rather it is the essence of organized activity and is the basic process out of which all other functions derive.

Heise and Miller have also concluded that communication patterns are a significant influence on organizational effectiveness.

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The problem of conducting communication research within an organization has been a difficult task, but Deutsch believes:

If we can map the pathways by which information is communicated between different parts of an organization and by which it is applied to the behavior of the organization in relation to the outside world we will have gone far toward understanding the organization. 15

Within the School of Health, Physical Education and Recreation there are three divisions and several subunits which typically appear to produce satisfactory amounts of intracommunication, but only minimal amounts of intercommunication. Such a lack of communication between the four divisions and the various subunits may ultimately lead to misunderstandings within the School. Since this is a time of reorganization within the School, it is hoped this type of study will promote increased cooperation and more effective communications for the future growth of the School.

It is felt that the research tool used in this study to measure the communication patterns within the School will provide information that will be of value to both administrators and faculty members.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter is devoted to presenting an overview of communication. Specifically, it will be concerned with early historical developments, the emergence of definitions and the elements of communication, organizational communication within systems, methods used in analyzing communications, barriers to organizational communication, and research findings which will enable one to discover, organize, and relate knowledge concerning human communication to an educational organization.

Early Historical Developments

Beginning with the Stone Age to the present, man has sought to accomplish his goals through communication. The building of the great pyramids; the voyage of Columbus to America; the many successful inventions during the "Industrial Revolution"; and the landing of man on the moon all illustrate the importance of the communication process. One of the first individuals to stress this importance in the business world was Dale Carnegie. It was through his writings and teachings, during the 1920's and the 1930's, that he achieved nationwide attention in trying to link communication skill
with managerial success.

A further stimulus for communication research came about with the Hawthorne studies which were undertaken by a group from the Harvard Graduate School of Business Administration. These studies, which began in 1927 in the Chicago plant of the Western Electric Company, were perhaps the first organized attempts to understand the human relations of the industrial worker, his problems, and his attitudes.\(^1\) An important concept derived from these studies was that upward communication is a necessary phase of any communication program.

Another pioneer in the promotion of the importance of managerial communication was Chester I. Barnard. In a classic statement he stated that, "The first function of the executive is to develop and maintain a system of communication."\(^2\) This system of communication should according to Barnard, recognize that the communicator is limited in the number of people with whom he can maintain effective communication -- the familiar theory of span-of-control.\(^3\) Every successful organization must have a system of communication. Such a system of communication must have


\(^2\) Barnard, op. cit., p. 226.

\(^3\) Ibid., p. 106.
centers or points of interconnection and can only operate as these centers are occupied by individuals who are called executives. Therefore, the function of executives is to serve as channels of communication so far as communication must pass through central positions.  

Throughout the 1940's there developed a school of thought which stressed the "human relations" aspect of communication. Pigors pointed out that "Communication is a joint process." In order for this joint process to really develop, communication must be a two-way street running between management and the worker with a permissive atmosphere of give and take. "Only if free communication is invited from every level within the enterprise, . . . can there be expression of meaning as a whole by all who are in a position to contribute to organizational efficiency."  

In 1952, Whyte also appealed for an honest attempt at "real" two-way communication. Whyte argued, "only with trust can there be any real communication, and until that trust is achieved the techniques and gadgetry of communi-  

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6 Ibid., p. 3.
cation are so much waste effort." He concluded, "the great energy of communication then, is the illusion of it. We have talked enough: but have not listened."^8

**Definitions and Elements of Communication**

As more disciplines became concerned about their communication problems it was necessary to define communication and to determine what was involved in the communication process. The definitions and elements presented in this section were established during the 50's and early 60's as the research continued.

Definitions of communication vary widely depending on the specific communication problem under discussion. The problem created by trying to evolve the one best definition has caused Newman to comment that such efforts are largely futile and pointless. He adds that any definition which is widely agreed upon will not be particularly useful to special groups and may inhibit further investigation into the real properties of communication. With this in mind several definitions will be considered at this time.

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^8Ibid., p. 38.

Schramm notes:

Communication comes from the Latin Communis, Common. When we communicate we are trying to establish a 'commonness' with someone. That is we are trying to share information, an idea, or an attitude. . . The essence of communication is getting the receiver and the sender 'tuned' together for a particular message.10

Simon has defined communication as, "any process whereby decisional premises are transmitted from one member of an organization to another."11 Hagman and Schwartz state: Communication is the catalytic means by which organizations are created, the means by which they are coordinated, and the means by which their purposes are transmitted into an action."12 "In essence, communication is concerned with who says what through which channel or medium to whom and with what impact."13

Without communication, there can be no organization, for communication means organization. When members of an organization are in communication with one another, they have the opportunity to develop common purposes and


coordinate human efforts. They are forming an organization. Cherry notes that "Communication is the discriminatory response of an organism to a stimulus." In reality, then, communication becomes a basic process of any organization. Redfield has stated this very nicely:

An organization is designed and engineered like a building or a machine... Information, properly used, is both the mortar that holds the structure together and the lubricant that permits the machine to operate with the least amount of friction. Without an efficient, distribution of the right kind of information an organization stands a good chance of disintegrating into an assortment of separate and unrelated parts.

Basically, communication is a social affair. The communication process provides the individual the opportunity for true social life experience. Cook summarizes his thoughts on this matter as follows:

(a) All communication among people involves the interaction of two or more things, either individuals or groups.

(b) Communication among people takes place through the medium of symbolic behavior.

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(c) This leads to a third, namely that communication is a social process.16

Elements of Communication -- The more basic elements in the study of communication will be identified at this time. These simple elements are really the elements on which the more advanced communication theories are based. An illustration of this can be found in the variety of communication models that have been developed. Each communication model contains four or five basic elements such as source, message, channel, and receiver. Shannon and Weaver17 provide the following model of a communication system:

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Information Source -> Transmitter -> Receiver -> Destination
```

In describing this particular model there is an information source who initiates a message which is to be transmitted to a destination. This general model includes a transmitter and a receiver connected directly to the destination. The concept of a noise source is also involved which


theoretically interferes to some degree with the information flow between transmitter and receiver. Various writers substitute the words encoder and decoder for transmitter and receiver. A brief description of the basic elements involved in this communication model may help clarify the communication process.

Most generally, the information source or communicator is a person. Within an organization, it is important to identify the key communicators for they are mainly responsible for communication success. The subject of the communication is referred to as the message, which may take anyone of a number of forms, depending on the means of transmission. Ross notes that "The message is an important element in communication but, contrary to common belief, it is not necessarily the most important." 18

In describing the channel, it is a completely different concept from the message. A message involves language while a channel is usually a printed, mechanical, or electronic device of some sort. The receiver of a communication is an indispensable element in the communication process because communication is a transitive proposition, that is, it must find an object in order to

properly be called communication at all.\textsuperscript{19}

Berlo and others have included the concept of an encoder and decoder in describing the communication process. In all communication, there is certain encoding and decoding which takes place. An example found in human communication is the converting of thought patterns into language symbols and the reconverting of these symbols into thought patterns. The noise source refers to the disturbances which effect the quality of a signal. It may be described as any disturbance that affects the fidelity of a communication. Berlo says, "Noise and fidelity are two sides of the same coin. Eliminating noise increases fidelity, the production of noise reduces fidelity."\textsuperscript{20}

**Communication Within Systems**

Organizational communication systems have two aspects: the formal system and the informal system. The formal system consists of those channels and media of communication which are consciously and deliberately established in an organization. The formal system should be carefully organized in terms of the purposes it is to serve. The

\begin{itemize}
  \item \textsuperscript{20}Berlo, op. cit., pp. 40-41.
\end{itemize}
communication structure should be organized so that it will permit the free flow of information and ideas in all necessary directions: upward, downward, and horizontal.\textsuperscript{21} There should be one or more definite formal channels of communication to and from every member of the staff and these channels should be understood by all persons involved. Communication lines should be short and direct and it should be perfectly possible for all members of the organization to act as senders of communication as well as recipients of communication.

The informal communication system is built around the social relationships of the members of the organization. Therefore, it is geared to personal more than organizational goals. When organizational and personal goals are harmonious, informal communications are likely to compliment formal communications, but when they are not, informal communications may counteract formal communications.

The term grapevine is commonly applied to the informal communication system. In most organizations, the "grapevine" probably plays, on the whole, a constructive role. Its chief disadvantages are, first, that it discourages frankness, since confidential remarks may be spread about;

\textsuperscript{21}Roald Campbell and Russell Gregg (eds.) \textit{Administrative Behavior in Education} (New York: Harper and Brothers, 1957), p. 298.
second, that the information transmitted by the grapevine is very often inaccurate. On the other hand, in addition to transmitting information that no one has thought to transmit formally, the grapevine is valuable as a barometer of "public opinion" in the organization. If the administrator listens to it, it apprises him of the topics that are subjects of interest to organizational members and their attitudes toward these topics. Even for this latter purpose of course, the grapevine needs to be supplemented by other channels of information.22

Considerable research on the value of the grapevine has been undertaken by Davis. He describes the desirable and undesirable characteristics as follows:

Desirable Characteristics

1. It gives supervisor insight into employee attitudes.

2. It spreads information faster than most management communication systems.

3. It acts as a safety valve for employee emotions.

4. It helps spread useful information.

5. It can interpret management's formal orders into the language of the workers.

Undesirable Characteristics

1. It spreads rumors and untruth.

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2. It is nonresponsible - it cannot be held responsible for its mistakes.

3. It is not shown on the organizational chart.

To be effective, communication must be a three-way process. There should be communication horizontally, upward and downward. Horizontal communication, through the sharing of useful information and ideas, helps knit organizational members into professionally and socially cohesive groups. Downward communication is a natural process and is very essential to organizational effectiveness. If communication is to stimulate mutual understanding throughout the organization then it must flow upward as well as downward. Planty and Machaver state the values of upward communication as follows:

Values to Supervisors

1. It is through unobstructed communication upward that we learn how fertile and receptive the soil is for communication downward.

2. If we are to gain understanding and full acceptance of our decisions, subordinates must be given the opportunity to participate in their making or at least to discuss the merits and defects of proposed actions.

3. From upward communication we discover whether subordinates get the message from downward communication that is intended by the superior.

4. Finally, effective upward communication encourages subordinates to offer ideas of value to themselves and the business.

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23 Davis, op. cit., p. 244.
Values to Subordinates

1. Upward communication helps satisfy basic human needs.

2. Employees who are encouraged to talk directly and frankly with their supervisors get a release of emotional tensions and pressures which otherwise may find outlet in criticism to other members of the company or community, or in loss of interest or efficiency.

3. Nothing is more fundamental to democracy than upward communication in which the ideas of subordinates are given prompt and sympathetic hearing followed by such action as is desirable. 24

Methods of Communication Analysis

There are several ways of performing an analysis of communication patterns in addition to the experimental method which is performed in the laboratory. Some of these methods will be discussed at further length.

Clinical Approach -- Both Mayo and Roethlisberger26 while at Harvard University, were involved in several studies including the Hawthorne studies. It was at this time that they came to realize the importance of improving the communication problems in business


25Elton Mayo, The Social Problems of An Industrial Civilization (Boston: Harvard University, Graduate School of Business Administration, 1945).

26Roethlisberger and Dickson, loc. cit.
in business organizations. Mayo described the method they used as the "Clinical Approach." It was a "living-in" style of observation by which a few members of a work force were interviewed and observed for a period of years. In the case of the Hawthorne studies it was for a period of five years. Through this method the clinical observers were able to get close to the group and make subjective judgments about communication patterns.

**Indirect Analysis** — Another method which has been used by Baker, Bakke, Shartle and others is "indirect analysis." Bakke, who has labeled the communication system a helper system to the other bonds of organization, obtained information from workers on seventeen different types of communication that were considered essential to the effective and efficient operation of the organization. He tried to determine, through the interview technique, how well the communication system was working and if the respondents were satisfied with the system. Information was obtained on the effectiveness of the channels of communication and the media used.

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Baker studied communications first in the New Brunswick plants of the Johnson and Johnson Company and later in the Bayway refinery of the Esso Standard Oil Company. These two case studies were undertaken to provide insight into the structure of the communication system as well as the substance of the communications, and to seek some measure of their effectiveness in terms of individual and group attitudes. The findings revealed several elements necessary for successful communications in organizations.

Shartle, conducting research at The Ohio State University, tried to determine with what other executive each member of the organization spent the most time. It can be assumed that the individual also communicated most with the same executive.

Duty Study — A third method is termed as "duty study." This method is an outgrowth of motion and time study, first performed during the early development of this country. Frank B. Gilbreth is given credit as the founder of the modern motion study technique. His first studies were performed while he was employed as a brick layer. Through his studies the average production increased from 120 bricks

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per man per hour to 350 bricks per man per hour. Gilbreth defines motion study as,

...the study of body motions used in performing an operation, with thought toward improving the operation by eliminating and simplifying necessary motions, and then establishing the most favorable motion sequence for maximum efficiency. 32

Time study, in this country, was first performed by Frederick W. Taylor while employed in Philadelphia by the Midvale Steel Company. Taylor suggested:

...that the work of each employee be planned out by the management at least one day in advance, and that each man receive complete written instructions describing his task in detail and noting the means to be used in accomplishing it. Each job was to have a standard time which was to be fixed after time studies had been made by experts. 33

Duty study is the study of communications as they pass a particular spot. This method provides information about the flow of information and therefore, it only shows, in a general way, the overall patterns of communication.

"Ecco Analysis" — A final approach which was used in this study is called "ecco analysis." 34 This tool was devised by Dr. Keith Davis, Chairman of the Management

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32 Ibid.

33 Ibid., p. 6.

Keith Davis, Chairman of the Management Department at Arizona State University. Since "episodic-communication-channels-in-organization-analysis" was such a long name, Dr. Davis shortened the name to "ecco analysis." "Ecco" is formed from the first letters of the words "Episodic Communication Channels (in) Organization" and is pronounced "echo," which is appropriate since this method simply reports the sequence of communications that have occurred as an echo reports them.

Davis points out the difference between "duty study" and "ecco analysis" when he states:

The different nature of ecco analysis is apparent when it is compared with duty study. In transportation terms, duty study analyzes the cars (unit of information) as they pass a particular point in space at a particular time, but ecco analysis follows particular cars from the beginning of their journey to the end. It focuses on a unit of information and follows it through time, space, and other dimensions.

**Communication Barriers**

Organizational communication would be an easy process if we could limit it to the case of the old man who liked to talk to himself. Asked why he did this, he replied, "Well, I reckon I like to talk to myself for two reasons: I like to talk to a smart man and I like to hear a smart man

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With this type of communication, both the communicator and listener can understand each other. Barriers start to appear when we add just one other person. The total communication process cannot be fully understood nor completely developed as an action program without examining the barriers that modify the program's effectiveness. These are the barriers which effect the flow of upward, downward, and horizontal communication. The very nature of the organization itself creates barriers. An efficient organization must plan for communication, consider the nature and complexity of the organizational structure, determine the best channels, and more particularly, determine the best medium to overcome the barriers.

Hoslett points out that many organizations really do not expect two-way communication. They are concerned only with sending orders and questions down from the top and receiving reports and explanations up from the bottom. If the phrase "two-way communication" is to have any meaning, then there must be a complete cycle including reports.

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and explanations going down as well as going up; and requests; criticisms, and questions going up as well as going down.

Barnard\textsuperscript{38} believes people will accept downward communication under certain simultaneous conditions. Initially, the individual must be able to comprehend the information; secondly, he must feel as though the request is not inconsistent with organizational purposes; thirdly, it must be compatible with his own personal interests; finally, he must be mentally and physically capable of complying with the request.

Riley\textsuperscript{39} notes that recipients of messages rarely hear or see the entire message but perceive what they want or need. Leavitt states, "When the communication system is a one-way loudspeaker, the simple absence of channels in one direction makes it mechanically impossible for the receiver to send relevant information back to the sender."\textsuperscript{40}

Berlo feels that communication breakdown is a problem in prediction of role. He says that a basic principle of communication in administration is that role behavior

\textsuperscript{38}Barnard, \emph{op. cit.}


\textsuperscript{40}Harold J. Leavitt, \textit{Managerial Psychology} (Chicago: University of Chicago Press, 1958), p. 213.
prescriptions, descriptions, and expectations should be closely related to each other. "People should (1) be told what they are expected to do, (2) be given an accurate prescription, and (3) be led to expect what will happen before it happens." Berlo describes his system of behavior as follows:

1. Role prescription: the formal, explicit statement of what behavior should be performed by a person in a given role.

2. Role description: a report of the behaviors that actually are performed by persons in a given role.

3. Role expectation: the images that people have about the behaviors that are performed by a person in a given role.

In the ideal system prescriptions, descriptions, and expectations about a given role are equivalent. In most organizations they are not. If they differ radically, communication breaks down within the organization.

Read, studying upward communications in industrial hierarchies, informs us that pleasant matters are more likely to be communicated upward than unpleasant ones. Such news about achievements seem to reach the upper echelons, whereas information pertaining to errors or

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41 Berlo, op. cit., p. 155.
42 Ibid., p. 153.
difficulties usually remains dormant. He notes that subordinate superior interpersonal trust appears to have the greatest single effect upon the accuracy of communication. Many times there is a status barrier between superior and subordinate that limits communication in either direction because of fear of disapproval on the one hand, or loss of prestige on the other.  

Another barrier is the so-called "spiral effect." Behavioral scientists have described it as a relationship among the members of a group that deteriorates until the members become less and less communicative. This lack of communication causes a further deterioration in relations, and as a result, a complete breakdown in the communication process. Newcomb describes this situation in the following general principle:

The greater the degree to which members of one group perceive the behavior of members of another as being hostile, the more communication between the two groups will be reduced. The same principle often applies to individuals but with somewhat less certainty.  

An administrator who is unable to handle the spiral effect will certainly lose his effectiveness and will cause extreme frustration throughout the organization. To overcome this situation the administrator should increase

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44Leavitt, op. cit., p. 213.

communications which should improve the personal relations among the members of the organization.

Lane et al.⁴⁶ have outlined the psychological and sociological factors which complicate the communication process. They point out that the administrator should recognize that communication problems in education "are not solved merely by increasing the flow of information," that "exposure does not guarantee effective communication," that "people may hear but do not always listen," that "a message may reach a person's desk but not his mind," and that "people may become almost immune to much of the enormous volume of messages that reaches them daily."⁴⁷ These socio-psychological forces point to the complexity of the communication process. Just a few simple words in a message or switching to a new channel or medium may not overcome the barriers to communication.

Effective communication requires more than just letters, memorandums, bulletins, notices, or other means of communication. It must be a continuing process that can't be compartmentalized or reduced to one or more communication programs. If the goal of communication is to establish

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⁴⁷ Ibid., p. 90.
complete understanding then this requires a never ending process of listening and telling -- of consultation between superior and subordinate. If this goal is to be achieved, communication must be continuous and automatic.

Laboratory Research

The experimental method which is conducted in the laboratory is another means of analyzing communication patterns. At this time several of these studies will be reviewed.

Bavelas and Barrett conducted a series of studies with the purpose of isolating certain properties of information handling systems. They were concerned with a basic property of all communication systems, "who is communicating with whom." The following patterns were used:

Pattern A  Pattern B  Pattern C

For all of the patterns, calculations were made for an index of dispersion, an index of centrality, and an index of peripherality. From the data collected it was discovered that the speed with which an organization emerges and its stability are related to the gradient of the indices.

Bavelas and Barrett, op. cit., p. 371.
of centrality in the pattern. Also noted was the fact that those individuals who occupied positions of low peripherality showed that they were satisfied and generally pleased with their work. While those individuals who occupied positions of high peripherality were apathetic, and dissatisfied with their work.

In a laboratory experiment, Back investigated the effect of group cohesiveness on communication. A major purpose of the experiment was to measure the effect of cohesiveness on the pressure toward uniformity within groups and the consequences of this effect. Students from two psychology classes at the University of Michigan took part in the experiment. The students were divided up into pairs and each member was placed in a separate room, shown a set of three photographs, and then asked to write a story of what they had seen. Once finished they were brought together to discuss their stories, then separated again to rewrite a final story.

The conclusions drawn from this study were: (1) members made more effort to reach an agreement in the highly cohesive groups; (2) behavior was more affected by the situation in the highly cohesive groups than in the low cohesive groups; (3) discussion was more effective in the highly cohesive

groups because group members changed more toward the partners' positions than they did in the less cohesive groups: and (4) this change was quite unevenly distributed among the members in the highly cohesive groups, while in the less cohesive groups, the changes were more evenly distributed.

The stimulus of Leavitt's research lies primarily in the work performed by Bavelas. Leavitt wished to explore experimentally the relationship between the behavior of small groups and the patterns of communication in which these groups would operate. The four experimental patterns used by Leavitt are diagramed as follows:

![Diagram of Circle, Chain, Y, and Wheel patterns]

Twenty groups, consisting of five men each, were given the task of discovering the single common symbol from among several symbols. When all five men indicated that they knew the common symbol, a trial was ended. The circle, chain, Y and wheel were found to be the order of preference. At one extreme, you find the circle which is most active, erratic, unorganized, and leaderless, but most satisfying to its members. At the other extreme, you find the wheel,

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which is less active, less erratic, has a distinct leader, is organized, but is less satisfying to most of its members.

It was noted that while performing in the different communication patterns, group behavior was affected. There were differences in accuracy, total activity, satisfaction of group members, emergency of a leader, and organization of the group. The positions which individuals occupied also affected their behavior. A characteristic of communication patterns most clearly correlated with behavioral differences was centrality. It was felt that when centrality and independence are evenly distributed, there will be no leader, many errors, high activity, slow organization, and high satisfaction.

Cohen, using the Bavelas-Leavitt procedure, attempted to explore some of the basic problems involving the effects of changes in the work structures defined by communication networks of problem-solving groups. He diagrams the various communication patterns as follows:

![Diagram of communication patterns]

Completely Connected  Circle  Chain  Wheel

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The wheel is considered the most hierarchical and is referred to as a "central-hub" system. In a problem solving procedure the four outside members send their information to the central member who acts upon it and sends it back. The chain is next highest in centrality. It is referred to as a "relay" system. The relay members can communicate to the central person and end members. In the circle, every member has equal communication opportunities. It is referred to as a "circuit". The last system, which is the completely connected system, is called an "each-to-all" system. There are no communication restrictions on any member.

In his first study, Cohen was concerned with the effects of continued practice. He experimented with the wheel and circle, and discovered the following differences. Wheels were faster, made fewer errors and sent fewer messages. Leadership was definitely present in the wheel groups while not even recognized in the circle groups. Neither differed significantly in satisfaction with their job, members, or tasks. The circles used the circuit problem-solving method while the wheels developed the central-hub method. Both networks became more efficient with time.
Guetzkow and Simon attempted to ascertain the importance of certain communication networks upon organization and performance in task-oriented groups. Their hypothesis may be stated thus:

Imposition of certain restrictions on the communication channels available to a group affects the efficiency of the group's performance, not directly by limiting the potential efficiency of task performance with optimal organization in the given net, but indirectly by handicapping their ability to organize themselves for efficient task performance.

Although an "all-channel" pattern was added, the study is a replicate of Leavitt's experiment. The communication nets are illustrated below:

![All Channel](image1)
![Wheel](image2)
![Circle](image3)

The experimenters randomly assigned 56 groups of five subjects each to the three communication networks. The only means of communication was by sending messages through slots in partitions. Given a particular task, the five subjects were to decide how they would divide

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53 Ibid., p. 260.
the labor involved. In this particular experiment, the wheel net is considered to be a "two-level hierarchy," especially when the "spokes" send their information to the "hub" who makes the decision and sends the answer back to the "spokes." The circle net is considered a "three-level hierarchy," if two neighbors send their information to their opposite neighbors, who in turn relay this information with their own to the fifth member, he makes the decision and sends the message back. In the all-channel net either one of these hierarchies could be considered. An important observation made was that the speed of task performance was approximately the same in all groups that attained an efficient arrangement regardless of the net in which they were operating.

Heise and Miller performed an experiment which was very similar in many respects to that of Leavitt's. Each subject was required to reach a solution to a problem through the communication method of speaking. The five communication nets were set up as follows:

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\( \begin{align*}
A & \leftrightarrow C \\
B & \rightarrow C & B & \rightarrow C & B & \rightarrow C & B & \rightarrow C \\
1 & 2 & 3 & 4 & 5
\end{align*} \)
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Heise and Miller, op. cit., pp. 327-335.
There were three problems to solve in this experiment. The first required the subjects to reassemble a list of words, the second consisted of constructing a sentence from words which had been distributed among the group members, and the third required the group to form anagrams. In solving the first problem it was found that a closed-chain, where all members talked and listened to all other members, was most efficient. The least efficient method was a closed chain in which only one-way communication was possible. In solving the second problem, the open chain, which had a man in a central coordinating position, replaced the two-way closed chain as most efficient. The third problem was equally solved over all nets. From this information the following conclusions were drawn: "The performance of a small group depends upon the channels of communication open to its members, the task the group must handle, and the stress under which they work."^55

Application of Communication Analysis to the Social Organization

Although there had been a numerous supply of material published on communication patterns, techniques, and methods in the areas of psychology, sociology, business administration, and educational administration, little had been

^55 Ibid., p. 335.
done to determine the actual communication situation within the organization until the late 50's.

In 1951, Bavelas stated:

The job of mapping an existing net of communications even in a relatively small company is a complicated and difficult one, but it is not impossible . . . . The Importance of bridging the gap between the simple, directly controlled experiment and the very complex indirectly controlled social situation cannot be overestimated. 56

Several of these studies which have been conducted in the actual organizational setting will be reviewed at this time.

Larsen and Hill57 studied a social structure and its interpersonal communication. They analyzed the relationship between a changing social structure and the communication of a message. An attempt was made to determine to what degree the communication network was related to the sociometric hierarchy as both structures developed in natural social settings. Two studies of small communities of boys in a summer camp were undertaken. In each of these communities, boys were chosen to start messages according to their position on the social structure. It was discovered that the more stable the social structure, 

56 Bavelas and Barrett, op. cit., p. 371.

the greater the influence of that structure on inter-
personal communication between community members.

Pelz\(^58\) investigated the interaction and attitudes
between scientists and the auxiliary staff in a govern-
ment research organization. Evidence was presented on the
effects of centralizing auxiliary services and on the
effects of various channels for securing these services.
It was found that centralization appeared to have no major
handicaps, although for the scientists, it did seem to
imply a reduction in control. It also was found that per-
sonal contact was replaced by written contact as the
structure became larger which would seem to indicate that
the role of the administrative office becomes more critical
as the organization expands.

In a study conducted by Blau,\(^59\) patterns of interaction
among a group of officials in a government agency were

\(^{58}\)Donald C. Pelz, "Interaction and Attitudes Between
321-336, and "Interaction and Attitudes Between Scientists
410-425.

\(^{59}\)Peter M. Blau, "Patterns of Interaction Among a
Group of Officials in a Government Agency," in Albert
Rubenstein and Chadwick Haberstroh (eds.), Some Theories
299-310.
studied. Three problem areas were investigated: (1) the interdependence between the way an official performs his duties and his interpersonal relations with his colleagues; (2) the usefulness of observable interaction as an index of status in the group; and (3) the relationship between interaction in "pair-events", contacts between two individuals, and "set-events", social situations involving more than two participants. As a result of his observations, Blau concluded that agents who were highly competent were those who received a large number of contacts in the course of social interaction. Being approached often gave an agent a feeling of security in social situations which he needed to interact with outsiders as well as with members of his own group. This competence definitely influenced the quality of his performance.

Studies Using "Ecco Analysis"

Davis was the originator and first used "ecco analysis" when he investigated channels of personnel communication within the management group of a manufacturing firm. The study involved sixty-seven management members, to which fourteen episodic communications were sent to determine the spread of a unit of information from its

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60 Keith Davis, "Channels of Personnel Communication Within the Management Group" (Unpublished Ph.D. Dissertation, The Ohio State University, 1952).
origin to all persons in the organization who knew it at the cut-off hour. The Davis study revealed that communication-network patterns could be superimposed on an organization chart to show relationships in communication concerning: (1) number of distorted facts that exist in the grapeview, (2) speed of grapevine, (3) activeness between and within line and staff groups, (4) communication activity of isolated groups, (5) horizontal grapevine flow, (6) extent of media used, and (7) types of communication which interest certain groups most.

Each participant was asked to complete a questionnaire which included the following questions: (1) if he received the information, (2) when he first received the information, (3) where he first received the information, and (4) how he first received the information. Several significant characteristics were noted:

1. Information transmitted by the grapevine (informal structure) exceeds that of the formal structure.

2. The grapevine was most active and operative at the place of work.

3. The grapevine was highly selective in its transmission of information.

4. The informal and formal structures seem to supplement one another.
The Sutton and Porter study, in essence, was a partial replication of the Davis study. A major concern was to test some of Davis' findings in a different organization, utilizing both rank and file managerial personnel.

Sutton and Porter wanted to determine whether communications role behavior is a function not only of the work situation, but also of certain personality characteristics of individuals. Personality data were obtained on the subjects through the use of the B.O.I.S. (Bass Orientation Inventory Scores). The study was performed in a State government unit with seventy-nine employees. Nine grapevine items were used with respect to where, when, and how the subjects had learned the information. The following conclusions were reached: (1) a very small percentage of individuals functioned as liaison individuals, (2) the higher an individual's position, the more he knew of on-going activities in the organization, (3) the predominant flow of information took place within rather than between functional groups, and (4) liaison individuals functioned as such regardless of the type of information which passed through the grapevine.

Another study which used the Davis method was that conducted by Marting. She described and analyzed the informal communication that was transmitted or received by employees in a manufacturing organization. The following questions were examined: (1) how can the grapevine be identified? and (2) how do line and staff members, managers and nonmanagers, male and female nonmanagers, male and female managers and nonmanagers, and higher-and-lower-level members contribute to the grapevine? The data appeared to warrant the following conclusions: (1) informal forces of social association are more determinant of grapevine behavior than are formal forces: authority and power, and (2) the desire for status as leaders of information appears to be as strong a motivation for (a) nonmanagers as for managers, (b) females as for males, and (c) lower-level members as for higher-level members.

These studies, which have used the "ecco analysis" method, point out the need for management to analyze the grapevine in order that they may understand, influence and control informal communications.

Application of Communication Analysis to Education

One of the first to study communication in an educational setting was McCleary. In 1957, he studied the structures and processes of interpersonal influence which operate within a school professional staff. To conduct the study, he first designed a sociometric instrument which permitted the identification of the regular contacts of individuals and the patterns of contact among sub-groups due to inter-individual contacts. He proceeded by analyzing the organizational structure through the use of matrix analysis and directed graph theory. Then he classified the members of the staff as high, medium, or low influentials. He found that there was considerable agreement among staff members concerning those with whom school affairs were regularly discussed.

Rollins conducted an exploratory study of the diffusion of information within public school staffs. The purposes were: (1) To discover how information, which is initiated by the principal, circulates through the staffs, and (2) to discover if information is received by the

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proper recipients. Along with these two purposes the following hypotheses were investigated: (a) The greater the saturation of communication contacts, the greater the diffusion of an item of information, and (b) the greater the "span" of input subjects the greater the diffusion of an item of information.

Through the use of questionnaires, data were collected and tabulated in matrix form. Rollins discovered that the saturation-diffusion hypothesis was not confirmed while the span-diffusion hypothesis was confirmed. Results of this study contain some other items of interest:

1. Administrators cannot assume that when an item of interest has been communicated to one staff member, all other members will hear it.

2. The content of an item of information appears to have an important affect upon the diffusion of information.

3. The attitudes of staff members toward their own and the principal's functional roles in the communication structure seem to affect the diffusion of information.

Engel\(^{65}\) analyzed communication patterns of central staff members in selected school systems in the State of Iowa. His purpose was to identify and describe formal communications that flowed to and from central staff positions in four

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public school systems. The techniques which he used were self-recording, formal interview, and observation. He investigated such matters as: (1) the status of those with whom the central staff members communicated, (2) message content, (3) media, (4) administrative processes, and (5) use of the communications. Engel concluded that communication events do yield the kind of data which lends further insight into the central staff’s administrative positions in the school hierarchy.

A similar study was performed by Klahn, in which he analyzed the patterns of communication of high school principals. His purpose was to identify and describe formal communication that was originated or received by the high school principals in four public school systems. One important conclusion noted was that communication with subordinates was rated as being of greater importance than communication with coordinate or superordinate personnel.

In 1964, Kampschroer investigated the upward communication systems in four selected secondary schools.

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The study was based on the assumption that a free flow of upward communication is necessary to a school because it expedites administrative decision-making and it promotes the morale of staff members. Kampschroer found nearly unanimous agreement on which medium should be used for communication in each situation. Significant disagreement between men and women on channel selection and the efficacy of each system of upward communication was also found. Situations dealing with personal problems produced greater divergence in selection of channels to be used for communication than did situations concerned with the resolution of routine school business.

In a study conducted by Rollins and Charters an attempt was made to shed some light on the diffusion of information by word of mouth from the principal to the teachers in a public high school. The investigators tested two hypotheses: (1) the greater the saturation the greater will be the diffusion of information, and (2) the greater the number of communication contacts of a staff member, the greater the number of staff members receiving the information. It was concluded that greater diffusion occurred in the low-saturation schools than in the high-saturation

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schools, and the number of relays of information was a direct function of the input teacher's span of communication contacts.

Influenced by McCleary's earlier work, Anderson proceeded to examine the communication structure and interpersonal relationships of the academic staff members in the College of Education at the University of Illinois. The study was designed to permit a compendium of centralization and decentralization of staff members at three time intervals in the five following areas: (1) college policies and problems, (2) improvement of instruction, (3) writing, (4) graduate research, and (5) personal research. It was found that the move from several buildings to one building had no effect upon communication patterns. This results in the conclusion that people tend to communicate with people within their own department.

McCleary directed a nationwide study, which was sponsored by the National Association of Secondary School Principals, on practices and problems relating to intra-school communication. Information was obtained through

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a questionnaire about methods and media of communication characteristics of communication systems, principals' perceptions of needs and priorities for improvement, and some evaluation of the effectiveness of various practices.

McCleary states:

Do not fall into the trap of readily blaming problems or the inability to solve problems on a failure in communications. Communications is not a cure-all. The principal might consider communications as (1) a system or network for obtaining and transmitting information, and (2) a process for sharing understanding, diagnosing, deciding and monitoring (or controlling) activity according to decisions made.71

The following seven principles may aid the principal in improving his own communications system.

1. The principal needs to take into account the nature of his uncertainty as well as the value of the communication devices.

2. The principal must judge the communication devices he wishes to use on the basis of the fidelity required.

3. The principal should incorporate both wide-band and narrow-band devices into his communication system. In making decisions one principal may want

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71 Ibid., p. 59.
concrete facts and quick decisions. He decides upon the aspects of a problem he feels to be important; he narrows the field rapidly, obtains accurate information about relatively few things, and reaches a decision. Another principal may wish to consult widely, seek alternatives, delay decisions as long as possible, and attempt to get committees to judge the information obtained.

4. Principals should be conscious of the approach they are taking and make use of appropriate communication devices for decision making — narrow-band devices for fidelity, wide-band devices for coverage.

5. As the principal makes use of communication devices in his decisions, he should make judgments about the accuracy of information they are providing.

6. The principal needs to have a fully functioning communications system that provides continuous, accurate feedback.

7. The principal will need to decide what his communications system is to be sensitive to and how sensitive it should be. The excerpt states: "Ibid., p. 60-61."
In 1968, Piper\textsuperscript{73} examined subgroups based on communication patterns within elementary school facilities and certain relationships between these groups and the perception of organizational climate. Through the use of a questionnaire, intra-faculty communication patterns were identified, then these patterns were mapped using a matrix technique which identified several subgroups. Piper also used the OCDQ (Organizational Climate Description Questionnaire). He obtained the following results: (1) faculty members were able to classify their communication relationships with a high degree of accuracy, (2) each subgroup was linked to at least one other group by one or more liaison persons, (3) grade level or subject taught was related to subgroup membership, (4) male-to-male communication saturation was higher than male-to-female or female-to-female, and (5) the greater the overall communication saturation within a school, the greater was the percentage of faculty members serving as liaison persons.

A study, different in nature, was conducted by Garner,\textsuperscript{74} She investigated patterns of communication between girls


and staff at a training school for adolescent girls. Verbal communication was investigated in disturbed and quiet cottages. The girls were divided into two groups, acting-out and nonacting-out. Two hypotheses were presented: (1) in quiet times, both girls and staff would report their relationship as complimentary, reflecting the staff dominance; and (2) in disturbed times the relationship would be symmetrical, reflecting ambiguity about which group was dominant. It was concluded that in quiet times, the predicted complimentary relationship was supported by the staff and the acting-out group. In disturbed times, the predicted symmetrical relationships were supported by both groups of girls, but not by the staff.

Using data from several of his communication studies, Charters75 focused attention on change in person-to-person communication among staff members of several elementary and high schools between the spring of one academic year and the fall of the next. Charters was particularly concerned with change in the structure within the organization and changes in the volume of communication. Questionnaires supplied the necessary data concerning communication bonds among staff members.

The following results were noted: (1) elementary school staffs communicated more than high school staffs, (2) the average number of contacts per staff member declined with increasing staff size, (3) nearly all staff members in schools with staff sizes of 12 or 13 were in contact; beyond that, differentiations in communication structure began to appear, and (4) in examining structural change, the high school's network became more highly centralized in the fall.

A more recent study in the area of communication was that presented by Case.76 His purpose was to describe the prevailing communication patterns within the College of Physical Education at the University of Illinois. The research instruments used were: (1) a communication structure questionnaire, (2) a personal data check list, and (3) the Sixteen Personality Factor Questionnaire. Case concluded: (1) the formal organization is supplemented by a well-developed informal structure; (2) the Dean of the College has established contact bonds with each of the assisting deans, department heads and division directors; (3) each division and department has developed an excellent

communications network, and (4) the factors of age, academic rank and years of employment were not significant variables in the determination of communication networks.

**Conclusion**

In this chapter an overview of communication has been presented. The historical developments point out that the early pioneers had a deep concern for communication in the business world. As a result of their concern emphasis was placed on defining communication and describing the basic elements which make up the communication process. As this process developed it became apparent that a formal and an informal system was present in almost every organization. The research indicates that if communication is to be effective, it must be a three-way process. There should be communication upward and downward, as well as horizontally. There are many communication barriers which have an effect upon this three-way process. In all organizations there are different barriers to effective communication. If an administrator is to overcome these barriers, he must demonstrate leadership ability through the process of communication.

The different methods of analyzing communication patterns have shed some light on the importance of effective communication. The laboratory research initiated by Bavelas and Leavitt has laid the groundwork for the com-
munication research that has been conducted within the social organization, and especially the educational organization.

Through this review of communication research in psychology, sociology, business administration and educational administration it was discovered that within the past decade communication has become a very important aspect of the administrative process. If the communication problems in our educational organizations are to be solved, more communication research is needed in our educational institutions.
CHAPTER III

DESIGN OF THE STUDY

The purpose of this chapter is to explain the methods and procedures employed throughout this study designed to analyze the communication patterns within the School of Health, Physical Education and Recreation at The Ohio State University. Primarily, it is concerned with the methodology associated with the nine sub-hypotheses presented in Chapter I.

The chapter will begin with a few brief reasons for selecting the School of Health, Physical Education and Recreation. It will also include a description of the School and faculty involved, as well as a description and an illustration of the administrative structure in operation at the time of this study. The Chapter will proceed with a description of the method of gathering the data. In conclusion, an explanation of the tabulation of responses and the statistical procedures will be presented.

Selection and Description of the Population

Since the writer is an instructor in the School of Health, Physical Education and Recreation, an ideal
situation was created to conduct such an investigation. As in any organization, the School has its own unique communication problems, some of which will be revealed in this study. At present, the School is experiencing some internal reorganization and, therefore, a study of this nature was undertaken to examine the communication patterns that do exist and to make recommendations to improve communications in the future.

On July 1, 1968 the School of Physical Education was accepted into the College of Education. This new structure replaced the Department of Physical Education which had its beginning in 1898, under the leadership of Dr. Christopher P. Linhart.¹

As a Department of Physical Education in its early beginning, "the faculty consisted of two people, Dr. Christopher P. Linhart, who had been employed earlier as Director of the Gymnasium and instructor of Hygiene and Physical Training, and Miss Stella Elliott, Associate Director of Gymnasium."²

The faculty has grown to 72 full-time members. However, for this investigation a total of 120 individuals with a

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status ranging from part-time lecturer to full professor, were asked to participate. Of this number, only 113 were responsive to this study. This number included 12 full professors, 13 associate professors, 14 assistant professors, 20 instructors, 13 teaching associates, 34 teaching assistants, and 7 part-time lecturers. A major factor in analyzing the effectiveness of communications in any organization, and especially in an educational institution, is the location of personnel. This appears to be a definite barrier within the School because the offices are located in several buildings throughout the campus including the Men's Gymnasium, the Men's Natatorium, Pomerene Hall, the Stadium, Ramseyer Hall and St. John Arena. Tables 1 and 2 provide a summary of the characteristics of the men and women who participated in this study.

**Administrative Structure**

At the time of this study, the School was operating under the organizational structure illustrated in Table 3. At the top of the administrative structure is the President of the University, who is responsible for the entire administration of the University. At the next step is the Vice President for Academic Affairs and Provost whose major responsibility lies with the instructional and faculty affairs of the University. Then to follow is the Dean of the College of Education. He is considered a faculty member
<table>
<thead>
<tr>
<th>Status</th>
<th>Administrator</th>
<th>Faculty</th>
<th>Staff</th>
<th>Part-Time Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>26</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>42%</td>
<td>44%</td>
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<td>7</td>
<td>8</td>
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<td>9</td>
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<td>11%</td>
<td>13%</td>
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<td>15%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>14</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>23%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Office Location</td>
<td>Men's Gym.</td>
<td>Men's Natatorium</td>
<td>Research Lab.</td>
<td>Pomer. Hall</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>21</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>34%</td>
<td>13%</td>
<td>5%</td>
</tr>
<tr>
<td>Years of Service at O.S.U.</td>
<td>1-3 Years</td>
<td>4-8 Years</td>
<td>9-12 Years</td>
<td>13 Years and Up</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>7</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>61%</td>
<td>11%</td>
<td>2%</td>
<td>26%</td>
</tr>
</tbody>
</table>
Table 2

SUMMARY OF CHARACTERISTICS OF FACULTY -- 51 WOMEN

<table>
<thead>
<tr>
<th>Status</th>
<th>Administrator</th>
<th>Faculty</th>
<th>Staff</th>
<th>Part-Time Help</th>
</tr>
</thead>
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<tr>
<td></td>
<td>2</td>
<td>24</td>
<td>20</td>
<td>5</td>
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<td>4%</td>
<td>49%</td>
<td>39%</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Rank</th>
<th>Prof.</th>
<th>Assoc.Prof.</th>
<th>Asst. Prof.</th>
<th>Instructor</th>
<th>Teach.Assoc.</th>
<th>Teach Asst.</th>
<th>Lect.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>10%</td>
<td>14%</td>
<td>22%</td>
<td>22%</td>
<td>18%</td>
<td>6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>10</td>
<td>3</td>
<td>27</td>
<td>53%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>20%</td>
<td>6%</td>
<td>53%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>40</td>
<td>3</td>
<td>3</td>
<td>6%</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of Service at O.S.U.</th>
<th>1-3 Years</th>
<th>4-8 Years</th>
<th>9-12 Years</th>
<th>13 Years and Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35</td>
<td>5</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>69%</td>
<td>10%</td>
<td>2%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Table 3
ORGANIZATIONAL STRUCTURE OF
THE SCHOOL OF HEALTH, PHYSICAL EDUCATION AND RECREATION

President
Vice President
Dean
College of Education
Director
of School
Executive Council
Chairman of Divisions
Graduate Chairman

Graduate School
Graduate Studies
Chairman
Program Committee:
Faculty Elected Members:
Undergrad. and Grad.
Students:
Undergrad. and Grad.
Research
Women's Physical Education Division
Men's Physical Education Division
Health Education Division
Recreation Division
School Faculty
who acts as the administrative head of the College. Appointment of the Dean is made by the Board of Trustees upon nomination by the President. Before making a decision, the President seeks nominations from the faculty members, as well as recommendations from the Chairman of the Departments and the Directors of the Schools within the College of Education. Among his many responsibilities, the Dean serves as the medium of communication for all official business of the College which may involve other university authorities, students or the general public.

Since the Department of Physical Education became a School within the College of Education, technically speaking, it has been recognized only as a School of Physical Education and not as a School of Health, Physical Education and Recreation operating with three divisions. The individual responsible for the leadership of the School is the Director. In selecting a Director, nominations are submitted by the faculty to the Dean of the College who confers with the President of the University. The Director is appointed for a term of four years by the Board of Trustees upon nomination by the President. The Director is eligible for re-appointment at the termination of his four years. Dr. Lewis Hess was appointed the first Director of the School and officially assumed that position October 1, 1969.

Operating in an advisory capacity to the Director is an Executive Council. This Council has been established so that
major areas within the School might be represented. It offers an opportunity for the leaders of the School to discuss the important issues which effect the School. With the development of this Council, a major step has been taken to improve the communications throughout the School. Dr. Hess, as the Director of the School, is the Chairman of the Executive Council. Other members include: Dr. Chalmer Hixson, Chairman of the Men's Division; Dr. Mary Beyrer, Chairman of the Women's Division; Dr. Wesley Cushman, Chairman of the Health Division; Dr. Robert Bartels, Chairman of Graduate Studies; Miss Naomi Allenbaugh, an appointed member from the Women's Division; and Dr. George Novotny, an appointed member from the Men's Division. The Divisional Chairman are responsible for the leadership and control of their respective divisions.

Method of Gathering Data

The survey method was used to gather the data for this study. Under the general term of survey method are the sub-methods, referred to as the interview, the questionnaire, and the direct observation. "In brief, the survey is extensive and cross sectional, dealing with a relatively large number of cases at a particular time, yielding statistics that are abstracted from particular cases."  

states that, "mainly because of its desirable qualities, the survey method is used more than any other method in personnel research today." The following paragraphs will explain how this method was used to study communication patterns within the School through the use of the questionnaire technique.

The basic approach used in this study was to obtain from each communication recipient data about how he first received the information that was being communicated. The same information was secured from each individual at the same time.

A one-page questionnaire, shown in Appendix A, was constructed for collecting the data. It is a combination and a modification of the questionnaires used in the Davis and Marting studies. The questionnaire is divided up into several sections with the first section being concerned with the name and dates. Before the questionnaires were sent out for each survey the name and date were placed at the top. All the recipient had to do was fill in the date upon receiving the questionnaire. Section two gives instructions to the men and women once they completed their response. The third section asks the question concerning the information being communicated while the fourth section asks the recipient if he knew of the communication. If the answer was yes
then the fifth section asks the following questions:

1. From whom did you receive the information?
2. How long ago did you receive the information?
3. By what method did you first receive the information?

Several variables were important items of concern in analyzing the data: employment status (administrator, faculty, staff or part-time help); academic rank (full professor, associate professor, assistant professor, instructor, teaching associate, teaching assistant or lecturer); academic interest (administration, professional preparation, research lab, health, recreation, basic instruction or a special interest area); sex; office location; and number of years of service at The Ohio State University.

Before the investigation could get under way, permission had to be granted by the Executive Council. Once permission was granted, an introductory letter was sent to all participants describing the mechanics for filling out the questionnaires. A copy of the letter can be found in Appendix A. The actual survey began on March 1, 1971 and ended on May 14, 1971. A pilot study consisting of the first two questionnaires, was undertaken to grant the surveyor the opportunity to make any necessary changes in the questionnaire or the operational procedures. Only a few minor changes were necessary. Once the data collection began, two or three
surveys were conducted each week, depending on the flow of communication within the School.

It was the responsibility of the surveyor to select the event or information which served as the subject for each survey. Assistance was obtained from selected individuals within the School, who either initiated the communication or were in a position where decisions were being made and the individual was aware of the communication. An attempt was made to get a reasonably wide range of topics for the seventeen surveys. Information which flowed through both the formal and the informal systems, as well as upward and downward flow of communications, was traced to determine the patterns. The information used for each survey originated with either an administrator, a faculty member, a teaching associate or a teaching assistant. In trying to determine the topic for each survey, information was obtained pertaining to either the basic instruction program, the research lab, health, recreation, professional preparation, administration or a special interest area.

The type of question being asked determined the participation for each survey. One survey may involve the total number of 113 individuals while another survey may just involve those individuals who teach in the Women's Division, the Men's Division, the Basic Instruction Program or any of the other units. A listing of the questions asked, in each of the 17 surveys, can be found in Table 4. A classifica-
tion as to whether the communication flowed through the formal or the informal communication system and a description of the formal initiation of each communication also can be found in Table 4.

Once a topic was chosen, secretaries within the Men's Division typed the question and the date on to a prepared stencil and copies were made for delivery for each participant. The use of a different color of paper for each questionnaire made it easier to tell them apart during the tallying process. The cut-off hour was always noon of the day the questionnaire was delivered, and the name of each recipient was written in the top right hand corner.

Each questionnaire was delivered to the respondent's mailbox in the morning and picked up at the end of the day. Upon completion of the questionnaire the women were asked to return their questionnaires to the questionnaire box located in Mrs. Mary Crouch's office, 201 Pomerene Hall, while the men were asked to return their questionnaires to the questionnaire box located in Mr. Trotter's office, 124 Men's Gym. Once all the questionnaires were gathered by the surveyor, the task then was to tabulate and analyze the results. The following section will describe the procedures involved.
<table>
<thead>
<tr>
<th>Question—Did you know...</th>
<th>Formal or Informal System</th>
<th>Formal Initiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. That Tom Steele has been given approval by the Executive Council to do research for his dissertation in the area of staff communications?</td>
<td>Formal</td>
<td>Dr. Lewis A. Hess sent out a memorandum on February 18, 1971.</td>
</tr>
<tr>
<td>2. That there will be a Men's Division faculty meeting on Wednesday, March 10, at 7:30 p.m.?</td>
<td>Formal</td>
<td>Dr. Chalmer Hixson sent out a memorandum on March 5, 1971.</td>
</tr>
<tr>
<td>3. That there will be a Women's Division faculty meeting on Friday, April 16, at 8:15 a.m.?</td>
<td>Formal</td>
<td>Dr. Mary Beyrer sent out a staff memo on April 7, 1971.</td>
</tr>
<tr>
<td>4. That there will be an intramural soccer program operating this spring quarter starting Thursday, April 22?</td>
<td>Formal</td>
<td>Larry Andryejewski, Supervisor of the Intramural Soccer Program sent out a notice on April 8, 1971.</td>
</tr>
<tr>
<td>5. That the Women's Division was conducting a summer workshop entitled, &quot;Catching Up With Change&quot;?</td>
<td>Formal and Informal</td>
<td>Dr. Mary Beyrer announced it in faculty meeting, March 2, 1971. Notices posted in Pomerene Hall.</td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
<td>Source</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6.</td>
<td>That Pat Dunn will have her colloquium entitled &quot;A Study of Graduate Health Education Programs in The United States,&quot; on Friday, April 16, at 3:00 p.m.?</td>
<td>Dr. Mary Beyrer sent out a notice on April 12, 1971.</td>
</tr>
<tr>
<td>7.</td>
<td>That the School of Health, Physical Education and Recreation was operating with no official internal organization?</td>
<td>Dr. Lewis A. Hess sent out a notice on April 13, 1971. Dr. Hess also discussed it in Men's Division faculty meeting.</td>
</tr>
<tr>
<td>8.</td>
<td>That a graduate student-faculty softball game and picnic were being planned for either May 15 or 16, or May 22 or 23?</td>
<td>Don Zingale sent out a notice on Thursday, April 15, 1971.</td>
</tr>
<tr>
<td>9.</td>
<td>That Jeff Monroe was a newly appointed representative from the School of Health, Physical Education and Recreation Undergraduate Association and will serve on the Executive Council?</td>
<td>Gwendolyn O'Guin, Chairman of the Undergraduate Association, sent out a notice on April 9, 1971.</td>
</tr>
<tr>
<td>10.</td>
<td>That the Research Lab has been granted a renewal of a grant to continue research in interval training?</td>
<td>Informal</td>
</tr>
<tr>
<td>11. That Dr. Delyte Morris, an Associate Professor in the Women's Division, is in the hospital?</td>
<td>Informal</td>
<td></td>
</tr>
<tr>
<td>12. That John Phillips has taken the position of Dean of the College at Sullivan County Community College (State University of New York) at South Fallsburg, New York?</td>
<td>Informal</td>
<td></td>
</tr>
<tr>
<td>13. That Dr. Delbert Oberteuffer is in the hospital?</td>
<td>Informal</td>
<td></td>
</tr>
<tr>
<td>14. That Andy Breiner, an Assistant Professor in the Men's Division, attended a Research Workshop at Burr Oak State Park?</td>
<td>Informal</td>
<td></td>
</tr>
<tr>
<td>15. That Mary Jo Ruggieri's O.S.U., Swan Club placed First in the Midwest Intercollegiate Synchronized Swimming Championship at Ann Arbor, Michigan, this past weekend?</td>
<td>Formal and Informal</td>
<td></td>
</tr>
<tr>
<td>16. That there will be a Brown Bag Seminar on Research for Prosthesis and Locomotion Friday, May 14, at 12:00 noon, in Room 206, Men's Bldg.?</td>
<td>Formal</td>
<td></td>
</tr>
</tbody>
</table>
Table 4 (Continued)

17. That Bruce Hollering, a Teaching Assistant in the Men's Division obtained a job at the University of Louisville for next year? Informal
Statistical Procedures

Of the seventeen surveys that were conducted approximately 1,470 questionnaires were returned for tabulation and statistical treatment. As responses to each questionnaire were received, they were tabulated on charts by hand. Analysis was made of each survey's tabulation to gain insight into new topics and to determine whether questionnaires were being properly completed. This proved very helpful because at one point individuals were answering yes to the main question but not completing the rest of the questionnaire. An attempt was made to improve this situation by underlining the directions found on each questionnaire.

Upon completion of all the surveys the tallies for each of the variables were totalled and percentages were calculated for table presentation. After the desired tables were developed, statistical tests were needed to determine the significance of reported pattern differences in the tables. Nominal nonparametric statistical tests were selected to treat the nine sub-hypotheses listed in the first chapter. The statistical procedures used to consider possible significance for the nine sub-hypotheses were:

1. The Chi-square test of goodness of fit was used to determine whether an observed frequency distribution departs significantly from a hypothesized frequency distribution.
2. The Chi-square test of independence, which is an extremely useful statistical procedure, was used to determine whether two nominal measures were related. Roscoe states that, "the Chi-square statistic provides a generalized procedure for testing hypotheses about the distribution of nominal and higher order data." The formula for the use of Chi-square is:

\[ x^2 = \sum \frac{(o - e)^2}{e} \]

3. An additional factor was included in 2 x 2 table tests for significance between expected and observed frequencies; the Yates' correction was incorporated into the Chi-square formula to permit conservative statistical testing. When the Chi-square continuous distribution is used to approximate a discrete distribution, certain corrections for continuity should be made through the inclusion of the Yates' correction. This correction is made only when the number of degrees of freedom is 1.

The net effect of using the correction factor is to reduce the size of the difference between each observed and expected frequency by 0.5 before squaring and summing. Such a reduction is necessary since the size of Chi-square

is overestimated when frequencies are few, due to the discrete nature of the distribution. The Chi-square formula incorporating the correction factor is:

$$x^2 = \sum \left( \frac{f_o - f_e}{f_e} - 0.5 \right)^2$$

**Conclusion**

In this chapter an attempt has been made to present the design of this study in order that the reader may obtain a better understanding of what is involved in the analysis of communication patterns within an educational organization.
CHAPTER IV

ANALYSIS OF THE DATA

This chapter includes a presentation of the analysis of the data concerning the communication patterns which exist within the School of Health, Physical Education and Recreation at The Ohio State University. To obtain the data for this analysis, the investigator conducted seventeen communication surveys. A total of 1,565 questionnaires were distributed to 113 participants. A 94% return was obtained with 6% of this return incomplete. Therefore, 89% of the questionnaires were analyzed with 54% of the participants answering yes and 46% answering no.

The information obtained from the questionnaires was used to test the nine sub-hypotheses listed in Chapter I. The null hypothesis was tested at the .10 level of confidence to determine if there were significant differences between each of the sub-hypotheses and the responses obtained from the questionnaires.

Since the Chi-square statistic was used to test the nine sub-hypotheses, Table 5 has been prepared to show the results of that testing. The Chi-square test of goodness
of fit was used to test the fifth and seventh sub-hypotheses while the Chi-square test of independence was used to test the other sub-hypotheses. It will be necessary to refer to Table 5 throughout the reading of this chapter.

Communication from Director

As can be noted in Table 5 a significant relationship was found to exist at the .10 level between men and women, and receiving communications from the director of the School. As a result, the null hypothesis was rejected. Table 6 illustrates this significant relationship clearly by showing the responses made by the men and women to surveys one and seven. It can be seen that 79% of the women said they received the two communications from the director of the school, while only 63% of the men said they received the same communications.

One explanation for this relationship is that it seems that women are more meticulous in their work than men. Women have a tendency to file important communications or make a note of them. Another more important reason is that each of the women have a mail box in Pomerene Hall where they receive all communications. This includes part-time help, as well as staff and full-time faculty members. The men have a central location in the Men's Gym but all of them do not have a mail box. This is especially true with the part-time men who have an office in St. John Arena. As a result, they receive
Table 5
RESULTS OF CHI-SQUARE TESTING
AT THE .10 LEVEL

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$x^2$</th>
<th>df</th>
<th>$x^2$ required for significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.5</td>
<td>1</td>
<td>2.71</td>
</tr>
<tr>
<td>2</td>
<td>2.9</td>
<td>7</td>
<td>12.0</td>
</tr>
<tr>
<td>3</td>
<td>55.8</td>
<td>16</td>
<td>23.5</td>
</tr>
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<td>4</td>
<td>19.5</td>
<td>6</td>
<td>10.6</td>
</tr>
<tr>
<td>5</td>
<td>44.3</td>
<td>3</td>
<td>6.25</td>
</tr>
<tr>
<td>6</td>
<td>5.9</td>
<td>8</td>
<td>13.4</td>
</tr>
<tr>
<td>7</td>
<td>48.4</td>
<td>3</td>
<td>6.25</td>
</tr>
<tr>
<td>8</td>
<td>5.5</td>
<td>1</td>
<td>2.71</td>
</tr>
<tr>
<td>9</td>
<td>11.7</td>
<td>2</td>
<td>4.61</td>
</tr>
</tbody>
</table>

aHypothesis refers to the nine sub-hypotheses presented in Chapter I.
bThe results of the Chi-square testing.
cThe degrees of freedom that were used.
dThe Chi-square required for significance.
very few communications.

**Communication From Director In Relationship to Time**

In relationship to time, it was found that there was no significant relationship at the .10 level between the men and women and the amount of time it takes for each to receive communications from the director of the School. Therefore, the null hypothesis was accepted in testing the second sub-hypothesis.

**Communication Media Used**

A significant relationship existed at the .10 level between the type of media used and the amount of time which individuals received communications. Therefore, the null hypothesis was rejected. Table 7 shows the responses according to the type of media used in relationship to the amount of time which individuals received communications. It can be noted that talking and listening to one other person in his presence, which is Talking and Listening One in Table 7, was the fastest means of communication. Quite often it was found that individuals had communicated with each other before a formal communication appeared. With individuals representing the seven different interest areas located throughout the campus and traveling from one building to another, this is a definite reason why the talking to one other person becomes a popular means of communication.
Table 6
COMMUNICATION FLOW FROM DIRECTOR OF THE SCHOOL

<table>
<thead>
<tr>
<th>Survey</th>
<th>Total Sent Out</th>
<th>Total Returned</th>
<th>Total Completed Replies</th>
<th>Completed Responses Men</th>
<th>Completed Responses Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td>Survey 1</td>
<td>110</td>
<td>98</td>
<td>89</td>
<td>56</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>37</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>19</td>
<td>34</td>
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<td>67</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Survey 7</td>
<td>113</td>
<td>95</td>
<td>84</td>
<td>53</td>
<td>39</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>8</td>
</tr>
<tr>
<td>Total</td>
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<td>193</td>
<td>87</td>
<td>109</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td>21</td>
</tr>
</tbody>
</table>
The memorandum is the most appropriate means of communication. In Table 7 the memorandum was used in Written and Visual One and Two and in Miscellaneous Two. The memorandum from the director of the School and the heads of the divisions were used in Written and Visual One and Two, while staff memoranda were used in Miscellaneous Two. Since division meetings and faculty meetings are held just once per quarter, the memorandum is an ideal method of communicating with the entire faculty in a relatively short period of time. It is of interest to note that the telephone was seldom mentioned as a means of receiving communications.

Communication Within and Between Interest Areas

A significant relationship existed at the .10 level between the communication flow within interest areas and the communication flow between interest areas. Thus, the null hypothesis was rejected. Table 8 shows that of a total of 240 personal communications, 63% were received from individuals within the same interest area. One explanation for this occurrence is that individuals from the seven different interest areas have offices in six different buildings. This provides an excellent opportunity for individuals of different interest areas to communicate with one another.
<table>
<thead>
<tr>
<th>Media Used in Relationship to Time</th>
<th>Days</th>
<th>Elapsed Time</th>
<th>Weeks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Today</td>
<td>Yest.</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Talking-listen.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Misc.</td>
<td>.4</td>
<td>1</td>
<td>.13</td>
<td>.4</td>
</tr>
<tr>
<td>Total</td>
<td>.4</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Talking-listen.</td>
<td>1</td>
<td>.13</td>
<td>.13</td>
<td>.4</td>
</tr>
<tr>
<td>Misc.</td>
<td>.26</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

All responses are recorded in percentages based on 744 returns.
Of the 37% of communications within an interest area, 33% were received by the people in health and basic instruction. To account for this, many of these people are teaching assistants and teaching associates and their office locations are pretty much centralized. The men occupy offices in the Men's Natatorium and the women occupy offices in Pomerene Hall.

People in health also proved to be key communicators. They communicated with individuals in other interest areas 20% of the total 63%. One explanation is that the people in health occupy offices in either Pomerene Hall, Men's Gym or the Men's Natatorium and, therefore, come in contact with a variety of people. Also some of the women in health occupy offices in the men's natatorium and as a result come in contact with the men in the Natatorium and the Men's Gym. At the time of this study these women in health were the only women who occupied offices on the same floor of a building as did the men. This explains why the health people have become key communicators.

Communication to Part-Time Help

A significant relationship existed at the .10 level between the employment status and people receiving communications. On this basis the null hypothesis was rejected. Table 9 shows the total responses according to employment status. Of the 124 communication questionnaires received by
Table 8

COMMUNICATIONS RECEIVED FROM SAME AND DIFFERENT INTEREST AREA

<table>
<thead>
<tr>
<th>Interest Area Received From Same</th>
<th>Received From Different</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Admin.</td>
</tr>
<tr>
<td></td>
<td>f</td>
</tr>
<tr>
<td>Admin.</td>
<td>1</td>
</tr>
<tr>
<td>Prof.</td>
<td>7</td>
</tr>
<tr>
<td>Prep.</td>
<td>3</td>
</tr>
<tr>
<td>Res. Lab.</td>
<td>4</td>
</tr>
<tr>
<td>Health</td>
<td>23</td>
</tr>
<tr>
<td>Basic Inst.</td>
<td>54</td>
</tr>
<tr>
<td>Rec.</td>
<td>1</td>
</tr>
<tr>
<td>Spec. Area</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>29</td>
</tr>
</tbody>
</table>

aCommunications received from the same interest area.
bCommunications received from different interest areas.
the part-time help, they were able to answer yes to only 27% of the communications. The part-time women were able to answer yes to 20% of these communications while the men were able to answer yes to only 7%. This can be explained by the fact that all part-time women are included in all of the communications which originate in the women's division while this is not so with the part-time men. They are not included in many of the communications which originate in the men's division.

The part-time men are involved in either intramurals or athletics and this occupies much of their time. Those in athletics have offices in St. John Arena which is quite a distance from the Men's Gym. As a result they do not come in contact with the key communicators.

It should be noted that the administration answered yes to 36% of the communications which indicates that they were well aware of the happenings involving the school.

Flow of Communications to Teaching Associates and Teaching Assistants

In testing the sixth sub-hypothesis, the null hypothesis was supported. There was no significant relationship between academic rank and the amount of time it takes for people to receive communications. It was expected that the teaching assistants and associates would be the last to receive communications because they really do not have any ties with the School. However, this was rejected.
Table 9
COMMUNICATIONS RECEIVED ACCORDING TO EMPLOYMENT STATUS

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Total Completed Returns</th>
<th>Total Responses</th>
<th>Total Responses</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Men</td>
<td>Yes</td>
</tr>
<tr>
<td>Admin.</td>
<td>83</td>
<td>71 86</td>
<td>12 14</td>
<td>51 61</td>
</tr>
<tr>
<td>Faculty</td>
<td>609</td>
<td>349 57</td>
<td>260 43</td>
<td>176 51</td>
</tr>
<tr>
<td>Staff</td>
<td>573</td>
<td>290 51</td>
<td>283 49</td>
<td>160 28</td>
</tr>
<tr>
<td>Part-Time Help</td>
<td>124</td>
<td>34 27</td>
<td>90 73</td>
<td>9 7</td>
</tr>
<tr>
<td>Total</td>
<td>1389</td>
<td>744 54</td>
<td>645 46</td>
<td>396 53</td>
</tr>
</tbody>
</table>
Horizontal Communication

There was a significant relationship at the .10 level between faculty with faculty communications and staff with staff communications. Therefore, the null hypothesis was rejected. Table 10 shows the responses of the faculty and staff in which they participated in 208 personal communications. Of this total, faculty members communicated with other faculty members 45% of the time while staff members communicated with other staff members only 17% of the time.

There are several reasons for such a significant relationship. To begin with, the staff members are centrally located and as a result do not come in contact with a variety of people from different interest areas who can bring them abreast of what is happening. The staff members are primarily students and spend much of their time in the classroom or preparing for the classroom. They do not communicate much with faculty members because in many cases there is still that barrier between student and faculty.

On the other hand, the faculty members are decentralized in their location and as a result come in contact with different people from different interest areas. Most of them have been at the institution for a number of years and have developed patterns of communication with other faculty members. The men's faculty lounge, the lunch room at
# Table 10

**FACULTY AND STAFF COMMUNICATIONS\(^a\)**

<table>
<thead>
<tr>
<th>Faculty Communication With Faculty</th>
<th>Faculty Communication With Staff</th>
<th>Staff Communication With Staff</th>
<th>Staff Communication With Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>93</td>
<td>45</td>
<td>51</td>
<td>25</td>
</tr>
</tbody>
</table>

\(^a\)The percentages are based on the 208 faculty and staff communications.
Pomerene Hall and the faculty club all provide a fine opportunity for faculty interaction.

**Verticle Communication**

A significant relationship was found to exist at the .10 level between communication origination and people receiving communications. Thus, the null hypothesis was rejected. Table 11 shows that the communications which originated at the top were received by 79% of the people while those which originated at the bottom were received by 63% of the people.

To illustrate the communications starting at the top, Surveys 1, 2 and 3 were used. Survey 1 was initiated by Dr. Hess, the Director of the School while Survey 2 was initiated by Dr. Hixson, Chairman of the Men's Division and Survey 3 was initiated by Dr. Beyrer, Chairman of the Women's Division. Surveys 4, 8 and 9 were used to illustrate communications starting at the bottom and were initiated by either a student or a teaching assistant.

One explanation for this significant relationship is that the communications which originate at the top are given more attention. A secretary is responsible for the communication. The name and date are printed clearly and it is run off on a stencil and placed in everybody's mail box. A communication which originates at the bottom is usually run off on a ditto and placed in the mail boxes by the student or graduate assistant. They are unfamiliar with the location of
<table>
<thead>
<tr>
<th>Comm. From Top</th>
<th>Total Sent Out</th>
<th>Total Returned Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td>Survey 1</td>
<td>110</td>
<td>98</td>
</tr>
<tr>
<td>Survey 2</td>
<td>54</td>
<td>51</td>
</tr>
<tr>
<td>Survey 3</td>
<td>52</td>
<td>47</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>196</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comm. from Bottom</th>
<th>Total Sent Out</th>
<th>Total Returned Completed</th>
<th>Replied Yes</th>
<th>Replied No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Survey 4</td>
<td>49</td>
<td>46</td>
<td>94</td>
<td>38</td>
</tr>
<tr>
<td>Survey 8</td>
<td>58</td>
<td>41</td>
<td>71</td>
<td>31</td>
</tr>
<tr>
<td>Survey 9</td>
<td>57</td>
<td>52</td>
<td>91</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>139</td>
<td>85</td>
<td>88</td>
</tr>
</tbody>
</table>
mail boxes and have a tendency to use the campus mail. Many times the name or the date is missing and it becomes confusing to the receiver of such a communication.

To illustrate the difference in style see Appendix B for samples of the memoranda used in Surveys 1, 2, 4 and 8. The first two are examples of communications which originate at the top while the last two are examples of communications which originated at the bottom.

In Table 11, it can be noted that the communication used for Survey 2 was initiated by Dr. Hixson. 98% responded yes they had received the communication. The communication used for Survey 4 was initiated by a student assistant in the intramural department and the yes response was 83%. This is an indication that the style of a memorandum and the care given to a memorandum are important items that must be considered in sending out memoranda as a means of communication.

**Communication Problem Areas**

A significant relationship existed at the .10 level between the location of personnel according to interest area and communications received. Therefore, the null hypothesis was rejected. Table 12 illustrates the responses to five surveys that were conducted concerning five informal communications. It should be noted that a greater percentage of no responses exist in each of the areas of health,
<table>
<thead>
<tr>
<th>Survey</th>
<th>Research Lab.</th>
<th>Health</th>
<th>Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey 10</td>
<td>3</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Survey 11</td>
<td>3</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>Survey 12</td>
<td>1</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Survey 13</td>
<td>1</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>Survey 14</td>
<td>4</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>40</td>
<td>10</td>
</tr>
</tbody>
</table>

There are four members in recreation, fifteen in health and four in the research lab.
recreation and the research lab. It is obvious that communication problems do exist, especially in recreation and the research lab.

Because of such few numbers and their location, these two units tend to become isolated from the main stream of communication. A factor that has hindered the recreation people is that Dr. Novotny, an important individual in the Recreation Sub-Unit, became ill as this study was starting and as a result, these people lost a key communicator.

Communication problems do exist within the health unit but they are not as extensive as the problems in recreation and the research lab. However, the health unit is unique. On the one hand they have several key communicators while on the other, they have several teaching associates and assistants who are students. As a result of their centralized location they tend to miss out on communications.
CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The primary purpose of this study was to analyze the prevailing communication patterns within the School of Health, Physical Education and Recreation. Initially, the hypothesis to be investigated stated: that the communication patterns which exist in the School of Health, Physical Education and Recreation at The Ohio State University inhibit the flow of communications. In order to determine the acceptability of this major hypothesis, the following sub-hypotheses were evaluated:

1. That there is no significant relationship between the sex of the person and the receiving of communications from the director of the School.

2. That there is no significant relationship between the sex of the person and the amount of time it takes to receive communications from the director of the School.

3. That there is no significant relationship between the type of media used and the amount of time in which people receive communications.
4. That there is no significant relationship between the communication flow within "interest areas" and the communication flow between "interest areas."

5. That there is no significant relationship between employment status and people receiving communications.

6. That there is no significant relationship between academic rank and the amount of time it takes to receive communications from the director of the School.

7. That there is no significant relationship between horizontal communication among full-time faculty members and horizontal communication among teaching associates and teaching assistants.

8. That there is no significant relationship between origination of communications and people receiving communications.

9. That there is no significant relationship between the location of personnel and people in the different interest areas receiving communications.

With these nine sub-hypotheses in mind, the study was undertaken. The population for this investigation consisted of 115 members of the School of Health, Physical Education and Recreation with a status ranging from part-time lecturer to full professor. This number included 12 full professors, 13 associate professors, 14 assistant professors, 20 instructors, 13 teaching associates, 34 teaching assistants and 7 part-time lecturers.
Utilizing the survey method, the questionnaire technique was used to gather the data. The basic approach was to obtain from each communication recipient data about how he received the information being communicated. A one-page questionnaire, shown in Appendix A, was constructed for collecting the data. The questions of concern were: (1) Did you know the information that was being communicated?, (2) From whom did you receive the information?, (3) How long ago did you receive the information?, and (4) By what method did you first receive the information?

Several variables were important items of interest for the analysis of the data: the employment status, academic rank, academic interest, sex, office location and years of service at The Ohio State University.

The actual survey began on March 1, 1971 and ended on May 14, 1971. Seventeen surveys were conducted tracing communications through the formal and the informal systems. Each questionnaire was prepared with the communication question stated at the top and delivered to the respondents mail box. Once they were returned and each survey was completed the responses were tallied on large charts. Upon completion of the seventeen surveys, the frequencies and percentages were calculated and prepared for analysis.
Generally speaking, most of the expectations of the project were accomplished. It seems clear that analysis of communication patterns, utilizing the Davis' Method "ecco analysis," is entirely feasible in an educational organization. The conclusions to the specifics of this research topic will be discussed in the following section.

Conclusions

The conclusions stated in this section are limited to the study population and do not apply to other educational organizations. The data were analyzed in accordance with the nine sub-hypotheses by use of the Chi-square statistic. On the basis of this analysis, the following conclusions were found.

Sub-Hypothesis 1

That there is no significant relationship between the sex of the person and the receiving of communications from the director of the School. The Chi-square test of independence was used to test the sub-hypothesis. The results indicated a significant relationship at the .10 level, therefore, the null hypothesis was rejected. It was found that the women received a greater percentage of communications which originated with the director of the School than did the men.
Sub-Hypothesis 2

That there is no significant relationship between the division in which a person works and the amount of time it takes for the person to receive communications from the director of the School. The Chi-square test of independence was used to test this sub-hypothesis and it was found that there was no significant relationship at the .10 level between the men and women and the amount of time it takes for each to receive communications from the director of the School. Therefore, the null hypothesis was accepted.

Sub-Hypothesis 3

That there is no significant relationship between the type of media used and the amount of time in which people receive communications. The Chi-square test of independence was again used to test this sub-hypothesis. A significant relationship at the .10 level was found to exist. Thus, the null hypothesis was rejected. The memorandum and talking and listening to one other person in his presence were the two most popular means of communication. However, the talking and listening to one other person was the fastest in relationship to time.

Sub-Hypothesis 4

That there is no significant relationship between the communication flow within "interest areas" and the communi-
cation flow between "interest areas." The Chi-square test of independence was used to test this sub-hypothesis. The null hypothesis was rejected as a significant relationship at the .10 level was found to exist. It was found that communication was greater between "interest areas" than within "interest areas."

Sub-Hypothesis 5

That there is no significant relationship between the employment status and people receiving communications. The Chi-square test of goodness of fit was used to test this sub-hypothesis. As a result, a significant relationship was found to exist at the .10 level. Thus, the null hypothesis was rejected. It was found that part-time help received a small number of communications and the men received fewer communications than the women.

Sub-Hypothesis 6

That there is no significant relationship between academic rank and the amount of time it takes for people to receive communications. The Chi-square test of independence was used to test this sub-hypothesis and as a result the null hypothesis was accepted. It was found that there was no significant relationship between academic rank and people receiving communications.

Sub-Hypothesis 7

That there is no significant relationship between horizontal communication among full-time faculty members
and horizontal communication among teaching associates and teaching assistants. The Chi-square test of goodness of fit was used to test this sub-hypothesis. A significant relationship was found to exist at the .10 level and, on this basis, the null hypothesis was rejected. Faculty members communicated with other faculty members more than staff members communicated with other staff members.

**Sub-Hypothesis 8**

That there is no significant relationship between the origination of communication and people receiving communications. The Chi-square test of independence was used to test this sub-hypothesis and a significant relationship was found to exist at the .10 level. Therefore, the null hypothesis was rejected. Communications which originated at the top were received by more people than communications which originated at the bottom.

**Sub-Hypothesis 9**

That there is no significant relationship between the location of personnel and people in the different interest areas receiving communications. The Chi-square test of independence was used to test this sub-hypothesis and a significant relationship was found to exist at the .10 level. Thus, the null hypothesis was rejected. The people in health, recreation and the research lab have the major problems in receiving communications.
From the analysis of these sub-hypotheses, the following conditions were found to exist within the School.

1. The administrators, who are members of the Executive Council, were the key communicators. The members are: Dr. Lewis Hess, Director of the School and Chairman of the Executive Council; Dr. Chalmer Hixson, Chairman of the Men's Division; Dr. Mary Beyrer, Chairman of the Women's Division; Dr. Wesley Cushman, Chairman of the Health Division; Dr. Robert Bartels, Chairman of Graduate Studies; Miss Naomi Allenbaugh, an appointed member from the Women's Division; and Dr. George Novotny, an appointed member from the Men's Division.

2. The part-time help received only a small portion of the communications, especially the men who work in the intramural and athletic departments. Those individuals in recreation and the research lab also received only a small portion of the communications.

3. The health and basic instruction units act as barriers to communication flow because of the employment of teaching associates and teaching assistants.

4. During the investigation a unique situation was found to exist. The health unit also acted as an implementer of communication flow.

5. The memorandum was the most effective method of communication. Talking to one other person in his presence
and the faculty meeting also were effective methods.

6. In relationship to time, the talking to one other person in his presence was the fastest method of communicating.

7. The nonteaching personnel played a small role in the communications process within the School.

8. The communication between the men and women was only minor.

In answer to the writer's hypothesis, the communication patterns which exist do inhibit the flow of communications in certain areas. Improvements need to be made in the following areas:

1. Communications to all part-time employees, especially the men in intramurals and athletics.
2. Communications between men and women.
3. Communications to those in recreation and the research lab.

**Recommendations**

In view of the evidence presented in this study, the following recommendations were made:

1. Communications with teaching associates and assistants be improved when they begin teaching duties. This is especially needed for the men. The women have an excellent manual for first year personnel containing answers to many questions concerning their job. This would certainly
improve communications with new personnel.

2. A specific style should be adopted and used when sending out memoranda with the date and name of sender on each communication.

3. A phone should be located in each office.

4. All faculty and divisional meetings should be scheduled a quarter in advance so that individuals could better plan for them.

5. A school publication should be started which would be published monthly revealing items of interest to members of the School.

6. If an administrator wishes to communicate with personnel, he needs to become involved and understand the informal communication system. Therefore, more research is needed in the area of informal communications within physical education schools, colleges and departments.

7. Continued investigations regarding the dynamics of human communication within educational organizations, are needed to determine if a general communication theory could be developed that would be applicable to all educational organizations.

8. Communication studies, such as those conducted by Dr. Keith Davis and Dr. Barbara Marting in business management, have resulted in improved organizational performance. This study was an attempt to use an adapted version of the tool used by Dr. Davis. Additional in-depth studies such
as this are needed in physical education organizations.

In view of the findings of this investigation, it would appear that physical educators interested in conducting research in administration could add much needed knowledge to the area of communication.
APPENDIX A

QUESTIONNAIRE AND INTRODUCTORY LETTER
Questionnaire for Episode 10

CONFIDENTIAL

Survey of information flow within the School of Health, Physical Education and Recreation. Please return to:
Women - questionnaire box located in Mrs. Mary Crouch's office, 201 Pomerene Hall
Men - questionnaire box located in Mr. Trotter's office, 124 Men's Gym.

Check one: _____Yes, I know it. _____No, I did not know it.

If your information was different, please write what you received:

If your answer above was "yes," please answer the three questions below:

Question 1. From whom did you first receive the information? If you received the information from a certain individual, please place his or her name on this line.

Question 2. How long before noon today did you receive the information? Circle the appropriate answer:
Today  Yesterday  2  3  4  5  6  7 days ago
2  3  4  5  6  7 weeks ago

Question 3. By what method did you first receive the information? Please check only one answer:

WRITTEN AND VISUAL METHOD
___1. Letter, bulletin, or memorandum from the HEAD of the SCHOOL.
___2. Letter, bulletin, or memorandum from a HEAD

TALKING AND LISTENING METHOD
___1. Talking with one other person in hit presence.
___2. Talking over the telephone.
of a DIVISION.

3. University newspaper or poster.

4. Public newspaper or advertisement.

5. Minutes of a meeting.

3. Talking (and listening) in a small group of two or more persons.

4. Attending an organized group meeting or conference.

5. Listening to radio or T.V.

MISCELLANEOUS: 1. I originated it.

2. Other (Please explain)

Please check to see that you have answered all the questions correctly. Any helpful suggestions will be appreciated. Thank you very much for your cooperation.
March 1, 1971

Dear

I wish to conduct a communication study that will be used as a doctoral dissertation here at The Ohio State University. This study is about you and your interactions in communicating within your work situation. An analysis of communication patterns will be made within the School of Health, Physical Education and Recreation and it is hoped that the information obtained can contribute to the organizational effectiveness of the School. Approval has been granted by the Executive Council of the School of Health, Physical Education and Recreation.

Your cooperation of two or three minutes every few days in completing several short questionnaires for the duration of this project will be greatly appreciated. The questionnaire will require only two check marks, one circle and a name. All responses will be kept in complete confidence and will not be seen by anyone but me. Each time you receive a questionnaire, please place your name and the date in the upper right hand corner. If the individual who communicated the information to you does not teach in the School of Health, Physical Education and Recreation, please designate his or her title, such as: secretary, student, neighbor, wife, husband, etc. Upon completion of the questionnaire, please return it to:

Women - questionnaire box located in Mrs. Mary Crouch's office, 201 Pomerene Hall
Men - questionnaire box located in Mr. Trotter's office, 124 Men's Gym.

Your cooperation will be appreciated. Thank you very much.

Sincerely,

TWS:psb

Thomas W. Steele
APPENDIX B

SAMPLES OF MEMORANDA
MEMORANDUM

TO: Faculty of the School of Health, Physical Education and Recreation
SUBJECT: Doctoral Study Concerning Communications
FROM: L. A. Hess

Mr. Tom Steele, an Instructor in Physical Education, is endeavoring to do the research for his dissertation in the areas of staff communication. He has requested that the Executive Council of the School give its approval for such a study and has been seeking faculty cooperation. The Executive Council sees his dissertation as a worthwhile project and has granted approval to go ahead with the research in which certain select members of the faculty will be asked to complete a number of single sheet questionnaire forms.
MEMORANDUM

TO: Men's Division Faculty
FROM: Chalmer G. Hixson, Chairman

There will be a meeting of the Men's Division faculty on Wednesday, March 10, at 7:30 P.M. in Rooms 36 and 37. If you are unable to attend, please let me know at your earliest convenience.
TO: Instructors of Basic Instruction Program Classes  
FROM: Supervisor of Intramural Soccer

Please announce in your Basic Instruction Classes that an Intramural Soccer Program will be held this Spring Quarter. Any undergraduate or graduate student, with the exception of present Varsity "D" Soccer lettermen, is eligible to play. Games will be played on Thursday evenings from 6:30 to 8:30 starting Thursday, April 22. Registration can be completed through Friday, April 16, at the Intramural Office or with class instructor. Each student will be notified of his team assignment.

To facilitate registration, I have attached registration cards for students in your class. Please have the students fill in both sides of the card before or after class and return them to you. I would then appreciate receiving the used or unused cards by dropping them into Mr. Tom Steele's questionnaire box in the Main Office.

Your cooperation in the matter will be appreciated.

Sincerely,

Larry Andryejewski  
Supervisor  
Intramural Soccer Program

LA:bjr  
Enclosures
TO: Faculty, Staff, and Graduate Students in HPER

FROM: Don Zingale

RE: First annual Graduate Student-Faculty Softball Game, Picnic and all around good time.

The school year is almost over, academically. Yet, socially, we've only just begun. The fall retreat fell through and the "ski-together", though successful, only had limited participation. So, it's time to try again with a hope that the first Annual GSFGP & AAGT will make up for all the time we've wasted.

No arrangements are definite yet and to ensure success, a questionnaire is attached so that you can have a hand in the planning. Please fill it out and return it to Kris Elder by Friday, April 23.
**BIBLIOGRAPHY**


**Periodicals**


Unpublished Materials


